



# LevelOne

## FBR-1416

4-port 10/100 Mbps ADSL Modem Router

## User's Manual

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# Chapter 1

# Introduction

1

*This Chapter provides an overview of the FBR-1416's features and capabilities.*

Congratulations on the purchase of your new FBR-1416. The FBR-1416 is a multi-function device providing the following services:

- **Shared Broadband Internet Access** for all LAN users.
- **4-Port Switching Hub** for 10BaseT or 100BaseT connections.

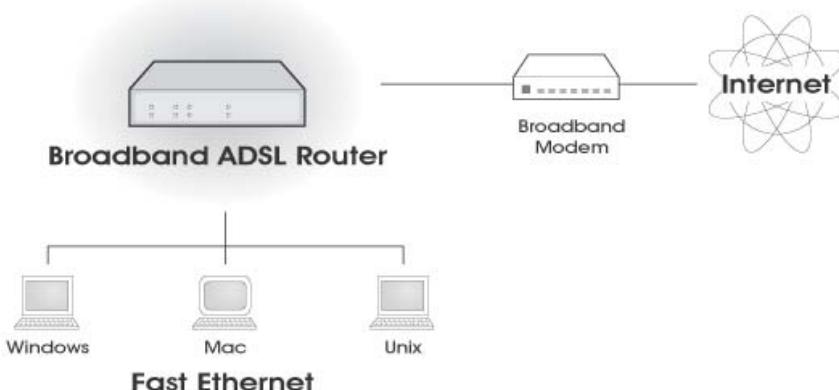


Figure 1: FBR-1416

## FBR-1416 Features

The FBR-1416 incorporates many advanced features, carefully designed to provide sophisticated functions while being easy to use.

### Internet Access Features

- **Shared Internet Access.** All users on the LAN or WLAN can access the Internet through the FBR-1416, using only a single external IP Address. The local (invalid) IP Addresses are hidden from external sources. This process is called NAT (Network Address Translation).
- **Built-in ADSL Modem.** The FBR-1416 has a built-in ADSL modem, supporting all common ADSL connections.
- **IPoA, PPPoE, PPPoA, Direct Connection Support.** The FBR-1416 supports all common connection methods.
- **Auto-detection of Internet Connection Method.** In most situations, the FBR-1416 can test your ADSL and Internet connection to determine the connection method used by your ISP.
- **Fixed or Dynamic IP Address.** On the Internet (WAN port) connection, the FBR-1416 supports both Dynamic IP Address (IP Address is allocated on connection) and Fixed IP Address.

## Advanced Internet Functions

- **Application Level Gateways (ALGs).** Applications which use non-standard connections or port numbers are normally blocked by the Firewall. The ability to define and allow such applications is provided, to enable such applications to be used normally.
- **Virtual Servers.** This feature allows Internet users to access Internet servers on your LAN. The required setup is quick and easy.
- **URL Filter.** Use the URL Filter to block access to undesirable Web sites by LAN users.
- **Logs.** Define what data is recorded in the Logs, and optionally send log data to a Syslog Server. Log data can also be E-mailed to you.
- **Firewall.** As well as the built-in firewall to protect your LAN, you can define Firewall Rules to determine which incoming and outgoing traffic should be permitted.
- **Dynamic DNS Support.** DDNS, when used with the Virtual Servers feature, allows users to connect to Servers on your LAN using a Domain Name, even if you have a dynamic IP address which changes every time you connect.
- **VPN Pass through Support.** PCs with VPN (Virtual Private Networking) software using PPTP, L2TP and IPSec are transparently supported - no configuration is required.

## LAN Features

- **4-Port Switching Hub.** The FBR-1416 incorporates a 4-port 10/100BaseT switching hub, making it easy to create or extend your LAN.
- **DHCP Server Support.** Dynamic Host Configuration Protocol provides a dynamic IP address to PCs and other devices upon request. The FBR-1416 can act as a **DHCP Server** for devices on your local LAN and WLAN.

## Configuration & Management

- **Easy Setup.** Use your WEB browser from anywhere on the LAN or WLAN for configuration.
- **Configuration File Upload/Download.** Save (download) the configuration data from the FBR-1416 to your PC, and restore (upload) a previously-saved configuration file to the FBR-1416.
- **Remote Management.** The FBR-1416 can be managed from any PC on your LAN. And, if the Internet connection exists, it can also (optionally) be configured via the Internet.
- **Network Diagnostics.** You can use the FBR-1416 to perform a *Ping* or *DNS lookup*.

## Security Features

- **Password - protected Configuration.** Optional password protection is provided to prevent unauthorized users from modifying the configuration data and settings.
- **NAT Protection.** An intrinsic side effect of NAT (Network Address Translation) technology is that by allowing all LAN users to share a single IP address, the location and even the existence of each PC is hidden. From the external viewpoint, there is no network, only a single device - the FBR-1416.
- **Firewall.** All incoming data packets are monitored and all incoming server requests are filtered, thus protecting your network from malicious attacks from external sources.
- **Protection against DoS attacks.** DoS (Denial of Service) attacks can flood your Internet connection with invalid packets and connection requests, using so much band-

width and so many resources that Internet access becomes unavailable. The FBR-1416 incorporates protection against DoS attacks.

## Package Contents

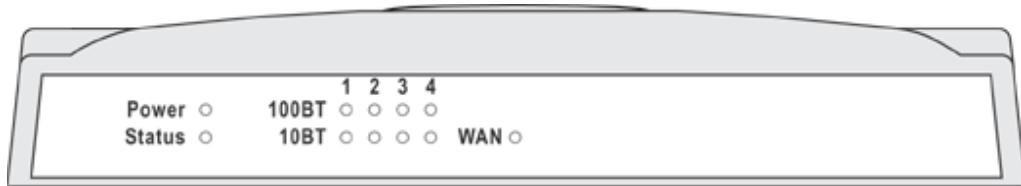
The following items should be included:

- The FBR-1416 Unit
- 1 Cat-5 Ethernet (LAN) cable
- 1 RJ-11 (ADSL) cable
- Power Adapter
- Quick Installation Guide
- CD-ROM containing the on-line manual.

If any of the above items are damaged or missing, please contact your dealer immediately.

## Physical Details

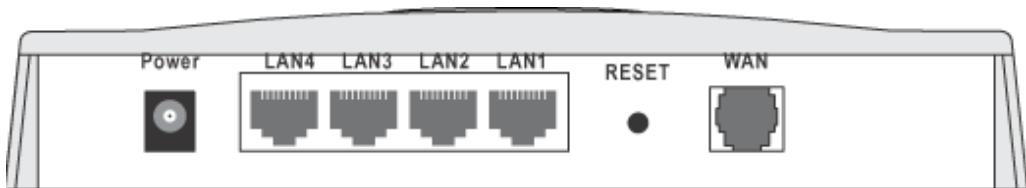
### Front-mounted LEDs



**Figure 2: Front Panel**

- |                                |  |
|--------------------------------|--|
| <b>Power LED<br/>(Green)</b>   | <b>On</b> - Power on.<br><b>Off</b> - No power.  |
| <b>Status LED<br/>(Yellow)</b> | <b>Off</b> - Normal operation.<br><b>Blinking</b> - This LED blinks during start up, and during a Firmware Upgrade.  |
| <b>LAN</b>                     | For each port, there are 2 LEDs, to indicate the connection speed (10BaseT or 100BaseT) of each port. <ul style="list-style-type: none"> <li>• <b>100BT</b> - This will be ON if the LAN connection is using 100BaseT, and Blinking if data is being transferred via the corresponding LAN port.</li> <li>• <b>10BT</b> - This will be ON if the LAN connection is using 10BaseT, and Blinking if data is being transferred via the corresponding LAN port.</li> <li>• If neither LED is on, there is no active connection on the corresponding LAN port.</li> </ul> |
| <b>WAN</b>                     | <b>On</b> - ADSL connection is available.<br><b>Off</b> - No ADSL connection.<br><b>Flashing</b> - Data is being transmitted or received via the ADSL connection.  |

## Rear Panel



**Figure 3: Rear Panel**

<b>Power port</b>	Connect the supplied power adapter here.
<b>10/100BaseT LAN connections</b>	Use standard LAN cables (RJ45 connectors) to connect your PCs to these ports.  <b>Note:</b> Any LAN port on the FBR-1416 will automatically function as an "Uplink" port when required. Just connect any port to a normal port on the other hub, using a standard LAN cable.
<b>Reset Button (Reset to Defaults)</b>	This button will reset the FBR-1416 to the factory default values. To do this, press and hold the Reset Button for five (5) seconds, until the Status LED is lit, then release the Reset Button, and wait the FBR-1416 to restart using the factory default values.
<b>WAN port (ADSL port)</b>	Connect this port to your ADSL line.

# Chapter 2

# Installation

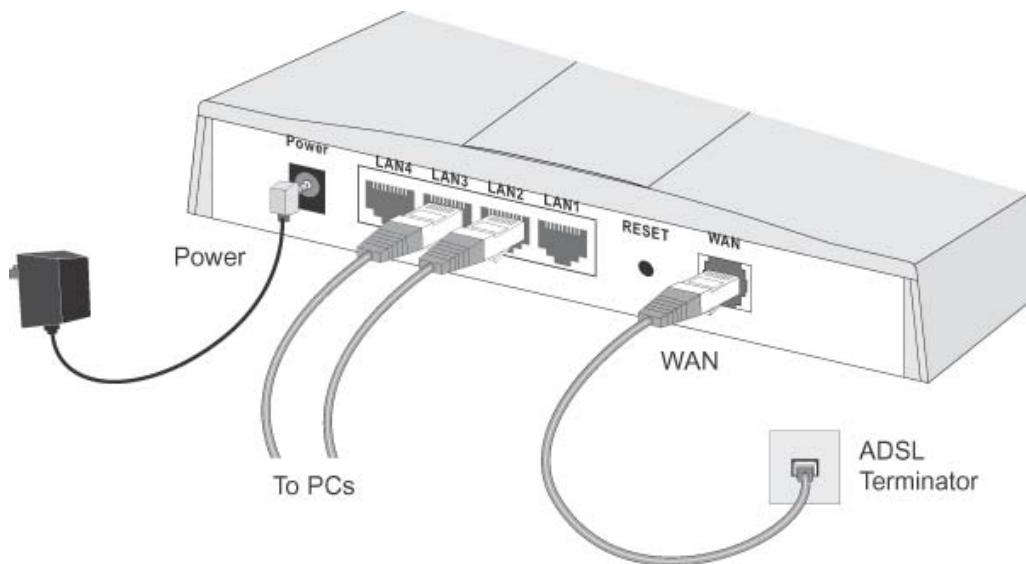
2

*This Chapter covers the physical installation of the FBR-1416.*

## Requirements

- Network cables. Use standard 10/100BaseT network (UTP) cables with RJ45 connectors.
- TCP/IP protocol must be installed on all PCs.
- For Internet Access, an Internet Access account with an ISP, and a DSL connection.

## Procedure



**Figure 4: Installation Diagram**

### 1. Choose an Installation Site

Select a suitable place on the network to install the FBR-1416.

### 2. Connect LAN Cables

Use standard LAN cables to connect PCs to the Switching Hub ports on the FBR-1416. Both 10BaseT and 100BaseT connections can be used simultaneously.

If required, connect any port to a normal port on another Hub, using a standard LAN cable. Any LAN port on the FBR-1416 will automatically function as an "Uplink" port when required.

### 3. Connect ADSL Cable

Connect the supplied ADSL cable from to the WAN port on the FBR-1416 (the RJ11 connector) to the ADSL terminator provided by your phone company.

## 4. Power Up

Connect the supplied power adapter to the FBR-1416 and power up.

Use only the power adapter provided. Using a different one may cause hardware damage

## 5. Check the LEDs

- The *Power* LED should be ON.
  - The *Status* LED should flash, then turn Off. If it stays on or blinking after 60 seconds, there is a hardware error.
  - , there is a hardware error.
  - For each LAN (PC) connection, one of the LAN LEDs should be ON (provided the PC is also ON.)
  - The *WLAN* LED should be ON
  - The *WAN* LED should be ON if the ADSL line is connected.
- .

For more information, refer to *Front-mounted LEDs* in Chapter 1.

# Chapter 3

## Setup

3

*This Chapter provides Setup details of the FBR-1416.*

### Overview

This chapter describes the setup procedure for:

- Internet Access
- LAN configuration
- Assigning a Password to protect the configuration data.

PCs on your local LAN may also require configuration. For details, see *Chapter 4 - PC Configuration*.

Other configuration may also be required, depending on which features and functions of the FBR-1416 you wish to use. Use the table below to locate detailed instructions for the required functions.

To Do this:	Refer to:
Configure PCs on your LAN.	Chapter 4: PC Configuration
Check FBR-1416 operation and Status.	Chapter 5: Operation and Status
Use any of the following Advanced features: <ul style="list-style-type: none"><li>• Internet</li><li>• Dynamic DNS</li><li>• Firewall Rules</li><li>• Firewall Services</li><li>• Schedule</li><li>• Virtual Servers</li></ul>	Chapter 6: Advanced Features
Use any of the following Administration Configuration settings or features: <ul style="list-style-type: none"><li>• PC Database</li><li>• Config File</li><li>• Logs</li><li>• Diagnostics</li><li>• E-mail</li><li>• Remote Admin</li><li>• Routing</li><li>• Upgrade Firmware</li></ul>	Chapter 7 Advanced Administration

## Configuration Program

The FBR-1416 contains an HTTP server. This enables you to connect to it, and configure it, using your Web Browser. **Your Browser must support JavaScript.**

The configuration program has been tested on the following browsers:

- Netscape V4.08 or later
- Netscape 7
- Internet Explorer V5.01 or later

### Preparation

Before attempting to configure the FBR-1416, please ensure that:

- Your PC can establish a physical connection to the FBR-1416. The PC and the FBR-1416 must be directly connected (using the Hub ports on the FBR-1416) or on the same LAN segment.
- The FBR-1416 must be installed and powered ON.
- If the FBR-1416's default IP Address (192.168.0.1) is already used by another device, the other device must be turned OFF until the FBR-1416 is allocated a new IP Address during configuration.

### Using your Web Browser

To establish a connection from your PC to the FBR-1416:

1. After installing the FBR-1416 in your LAN, start your PC. If your PC is already running, restart it.
2. Start your WEB browser.
3. In the *Address* box, enter "HTTP://" and the IP Address of the FBR-1416, as in this example, which uses the FBR-1416's default IP Address:  
HTTP://192.168.0.1
4. When prompted for the User name and Password, enter values as follows:
  - User name      admin
  - Password      password

## If you can't connect

If the FBR-1416 does not respond, check the following:

- The FBR-1416 is properly installed, LAN connection is OK, and it is powered ON. You can test the connection by using the "Ping" command:
  - Open the MS-DOS window or command prompt window.
  - Enter the command:  
`ping 192.168.0.1`
 If no response is received, either the connection is not working, or your PC's IP address is not compatible with the FBR-1416's IP Address. (See next item.)
- If your PC is using a fixed IP Address, its IP Address must be within the range 192.168.0.2 to 192.168.0.254 to be compatible with the FBR-1416's default IP Address of 192.168.0.1. Also, the *Network Mask* must be set to 255.255.255.0. See *Chapter 4 - PC Configuration* for details on checking your PC's TCP/IP settings.
- Ensure that your PC and the FBR-1416 are on the same network segment. (If you don't have a router, this must be the case.)

## Setup Wizard

The first time you connect to the FBR-1416, the Setup Wizard will run automatically. (The Setup Wizard will also run if the FBR-1416's default settings are restored.)

1. Step through the Wizard until finished.
  - You need the data supplied by your ISP. Most connection methods require some data input.
  - The common connection types are explained in the table below.
2. On the final screen of the Wizard, run the test and check that an Internet connection can be established.
3. If the connection test fails:
  - Check all connections, and the front panel LEDs.
  - Check that you have entered all data correctly.

## Common Connection Types

Type	Details	ISP Data required
Dynamic IP Address	Your IP Address is allocated automatically, when you connect to your ISP.	a) ADSL parameters (VPI and VCI) may be required, if they cannot be detected automatically. b) Some ISP's may require you to use a particular <i>Hostname</i> or <i>Domain</i> name, or MAC (physical) address.

Static (Fixed) IP Address	Your ISP allocates a permanent IP Address to you. Usually, the connection is "Always on".	a) ADSL parameters (VPI and VCI) may be required, if they cannot be detected automatically.  b) IP Address allocated to you, and related information, such as Network Mask, Gateway IP address, and DNS address.
PPPoE, PPPoA	You connect to the ISP only when required. The IP address is usually allocated automatically.	a) ADSL parameters (VPI and VCI) may be required, if they cannot be detected automatically.  b) User name and password are always required.  c) If using a Static (Fixed) IP address, you need the IP address and related information (Network Mask, Gateway IP address, and DNS address)
IPoA (IP over ATM)	Normally, the connection is "Always on".	a) ADSL parameters (VPI and VCI) may be required, if they cannot be detected automatically.  b) IP Address allocated to you, and related information, such as Network Mask, Gateway IP address, and DNS address.

## Home Screen

After finishing the Setup Wizard, you will see the *Home* screen. When you connect in future, you will see this screen when you connect. An example screen is shown below.



**Figure 5: Home Screen**

### Main Menu

The main menu, on the left, contains links to the most-commonly used screen. To see the links to the other available screens, click "Advanced" or "Administration".

The main menu also contains two (2) buttons:

- **Log Out** - When finished, you should click this button to logout.
- **Restart** - Use this if you wish to restart the FBR-1416. Note that restarting the Router will break any existing connections to or through the Router.

### Navigation & Data Input

- Use the menu bar on the left of the screen, and the "Back" button on your Browser, for navigation.
- Changing to another screen without clicking "Save" does NOT save any changes you may have made. You must "Save" before changing screens or your data will be ignored.



**On each screen, clicking the "Help" button will display help for that screen.**

## Mode Screen

Use the *Mode* link on the main menu to reach the Mode screen. An example screen is shown below.



**Figure 6: LAN Screen**

### Data - Mode Screen

<b>Device Mode</b>	
<b>Device Name</b>	This field displays the current name of this device.
<b>Subnet Mask</b>	The default value 255.255.255.0 is standard for small (class "C") networks. For other networks, use the Subnet Mask for the LAN segment to which the WBR-3407 is attached (the same value as the PCs on that LAN segment).
<b>Device Mode</b>	Select the desired device mode for the router: <ul style="list-style-type: none"> <li>Router - Both the ADSL Modem and the Router features are operational. In this mode, this device can provide shared Internet Access to all your LAN users.</li> <li>Modem - Only the ADSL Modem component is operational. All Router features are disabled. This device is "transparent" - it does not perform any operations or make any changes to the network traffic passing through it.</li> </ul>
<b>Language</b>	Select the desired language for this user interface.

## LAN Screen

Use the *LAN* link on the main menu to reach the LAN screen. An example screen is shown below.



Figure 7: LAN Screen

### Data - LAN Screen

TCP/IP	
<b>IP Address</b>	IP address for the FBR-1416, as seen from the local LAN. Use the default value unless the address is already in use or your LAN is using a different IP address range. In the latter case, enter an unused IP Address from within the range used by your LAN.
<b>Subnet Mask</b>	The default value 255.255.255.0 is standard for small (class "C") networks. For other networks, use the Subnet Mask for the LAN segment to which the FBR-1416 is attached (the same value as the PCs on that LAN segment).
<b>DHCP Server</b>	<ul style="list-style-type: none"> <li>If Enabled, the FBR-1416 will allocate IP Addresses to PCs (DHCP clients) on your LAN when they start up. The default (and recommended) value is Enabled.</li> <li>If you are already using a DHCP Server, this setting must be Disabled, and the existing DHCP server must be re-configured to treat the FBR-1416 as the default Gateway. See the following section for further details.</li> <li>The <b>Start IP Address</b> and <b>Finish IP Address</b> fields set the values used by the DHCP server when allocating IP Addresses to DHCP clients. This range also determines the number of DHCP clients supported.</li> </ul> <p>See the following section for further details on using DHCP.</p>

### DHCP

#### What DHCP Does

A DHCP (Dynamic Host Configuration Protocol) **Server** allocates a valid IP address to a DHCP **Client** (PC or device) upon request.

- The client request is made when the client device starts up (boots).
- The DHCP Server provides the *Gateway* and *DNS* addresses to the client, as well as allocating an IP Address.
- The FBR-1416 can act as a **DHCP server**.
- Windows 95/98/ME and other non-Server versions of Windows will act as a DHCP **client**. This is the default Windows setting for the TCP/IP network protocol. However, Windows uses the term *Obtain an IP Address automatically* instead of "DHCP Client".
- You must NOT have two (2) or more DHCP Servers on the same LAN segment. (If your LAN does not have other Routers, this means there must only be one (1) DHCP Server on your LAN.)

## Using the FBR-1416's DHCP Server

This is the default setting. The DHCP Server settings are on the *LAN* screen. On this screen, you can:

- Enable or Disable the FBR-1416's *DHCP Server* function.
- Set the range of IP Addresses allocated to PCs by the DHCP Server function.



You can assign Fixed IP Addresses to some devices while using DHCP, provided that the Fixed IP Addresses are NOT within the range used by the DHCP Server.

## Using another DHCP Server

You can only use one (1) DHCP Server per LAN segment. If you wish to use another DHCP Server, rather than the FBR-1416's, the following procedure is required.

1. Disable the DHCP Server feature in the FBR-1416. This setting is on the LAN screen.
2. Configure the DHCP Server to provide the FBR-1416's IP Address as the *Default Gateway*.

## To Configure your PCs to use DHCP

This is the default setting for TCP/IP for all non-Server versions of Windows.

See *Chapter 4 - Client Configuration* for the procedure to check these settings.

## Password Screen

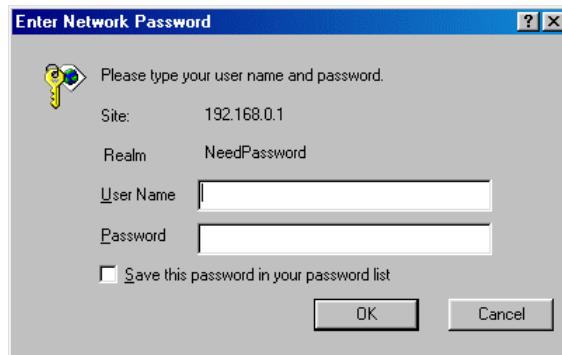
The password screen allows you to assign a password to the FBR-1416.



**Figure 8: Password Screen**

Old Password	Enter the existing password in this field.
New password	Enter the new password here.
Verify password	Re-enter the new password here.

You will be prompted for the password when you connect, as shown below.



**Figure 9: Password Dialog**

- The "User Name" is always `admin`
- Enter the password for the FBR-1416, as set on the *Password* screen above.

# Chapter 4

# PC Configuration

4

*This Chapter details the PC Configuration required on the local ("Internal") LAN.*

## Overview

For each PC, the following may need to be configured:

- TCP/IP network settings
- Internet Access configuration

## Windows Clients

This section describes how to configure Windows clients for Internet access via the FBR-1416.

The first step is to check the PC's TCP/IP settings.

The FBR-1416 uses the TCP/IP network protocol for all functions, so it is essential that the TCP/IP protocol be installed and configured on each PC.

### TCP/IP Settings - Overview

**If using the default FBR-1416 settings, and the default Windows TCP/IP settings, no changes need to be made.**

- By default, the FBR-1416 will act as a DHCP Server, automatically providing a suitable IP Address (and related information) to each PC when the PC boots.
- For all non-Server versions of Windows, the default TCP/IP setting is to act as a DHCP client.

**If using a Fixed (specified) IP address, the following changes are required:**

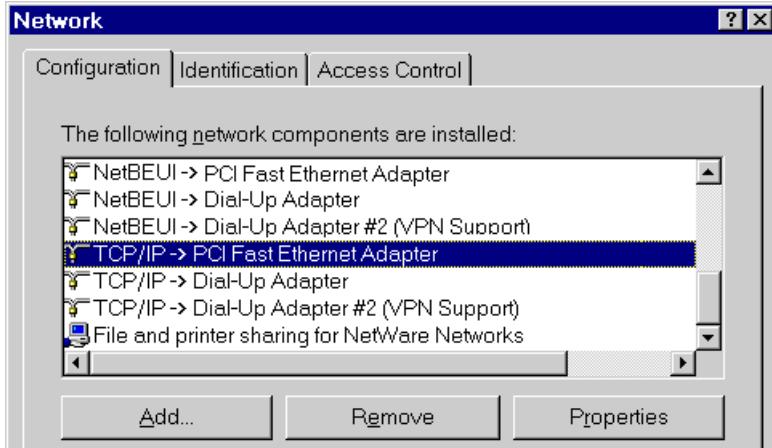
- The *Gateway* must be set to the IP address of the FBR-1416
- The *DNS* should be set to the address provided by your ISP.



**If your LAN has a Router, the LAN Administrator must re-configure the Router itself. Refer to *Chapter 8 - Advanced Setup* for details.**

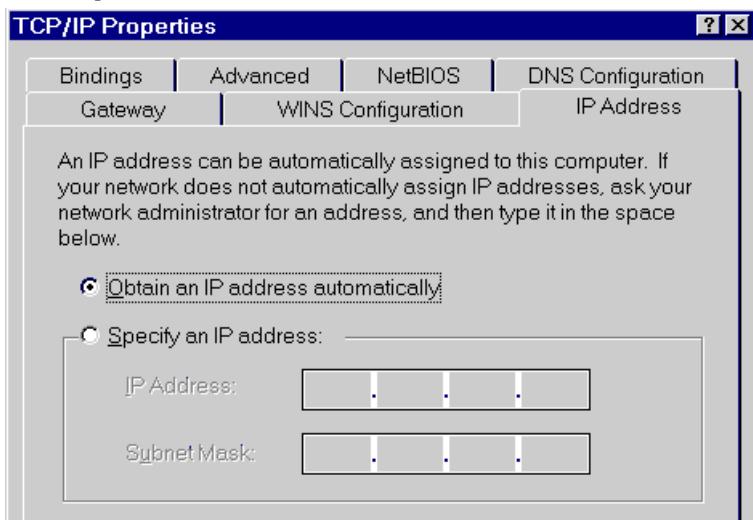
## Checking TCP/IP Settings - Windows 9x/ME:

1. Select *Control Panel - Network*. You should see a screen like the following:



**Figure 10: Network Configuration**

2. Select the *TCP/IP* protocol for your network card.
3. Click on the *Properties* button. You should then see a screen like the following.



**Figure 11: IP Address (Win 95)**

Ensure your TCP/IP settings are correct, as follows:

### Using DHCP

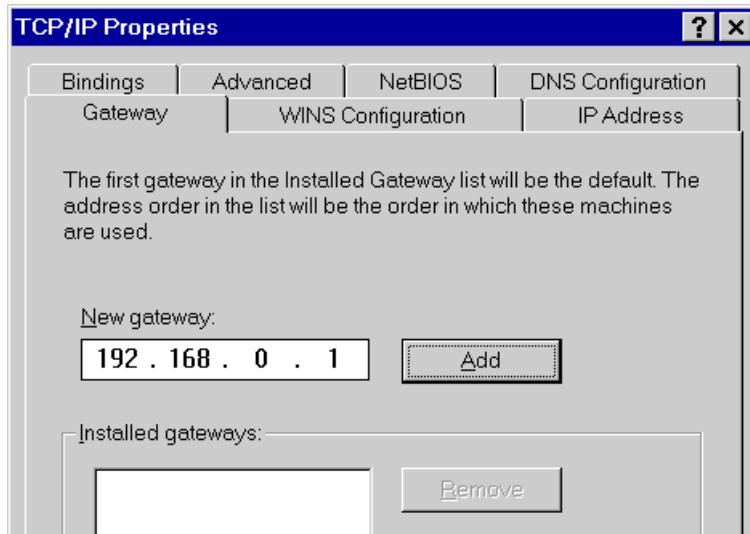
To use DHCP, select the radio button *Obtain an IP Address automatically*. This is the default Windows setting. **Using this is recommended**. By default, the FBR-1416 will act as a DHCP Server.

Restart your PC to ensure it obtains an IP Address from the FBR-1416.

### Using "Specify an IP Address"

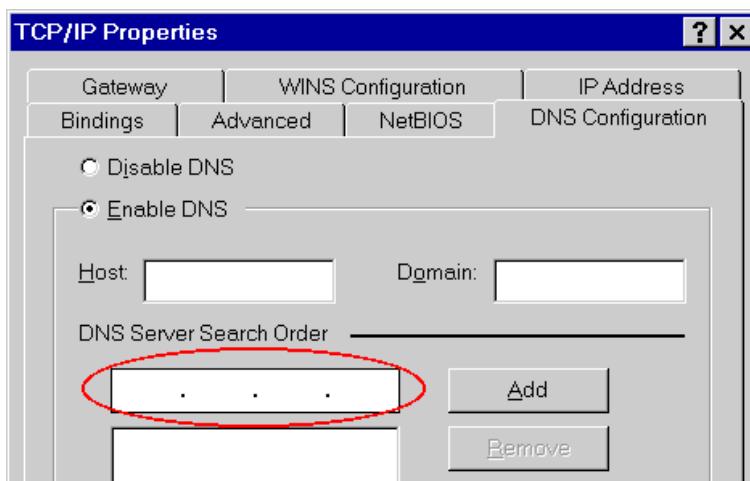
If your PC is already configured, check with your network administrator before making the following changes:

- On the *Gateway* tab, enter the FBR-1416's IP address in the *New Gateway* field and click *Add*, as shown below. Your LAN administrator can advise you of the IP Address they assigned to the FBR-1416.



**Figure 12: Gateway Tab (Win 95/98)**

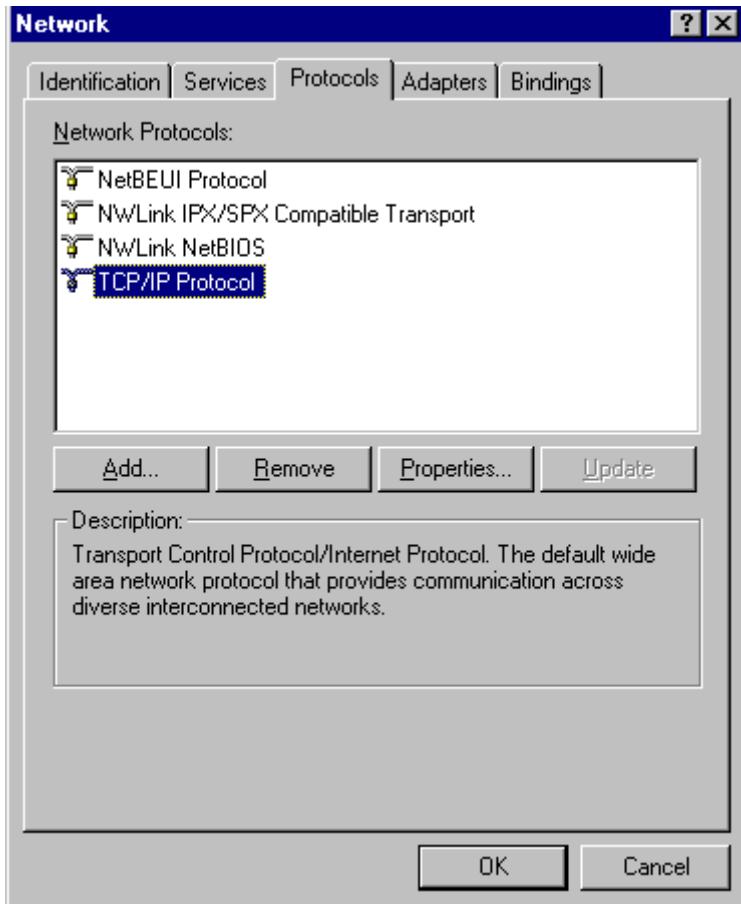
- On the *DNS Configuration* tab, ensure *Enable DNS* is selected. If the *DNS Server Search Order* list is empty, enter the DNS address provided by your ISP in the fields beside the *Add* button, then click *Add*.



**Figure 13: DNS Tab (Win 95/98)**

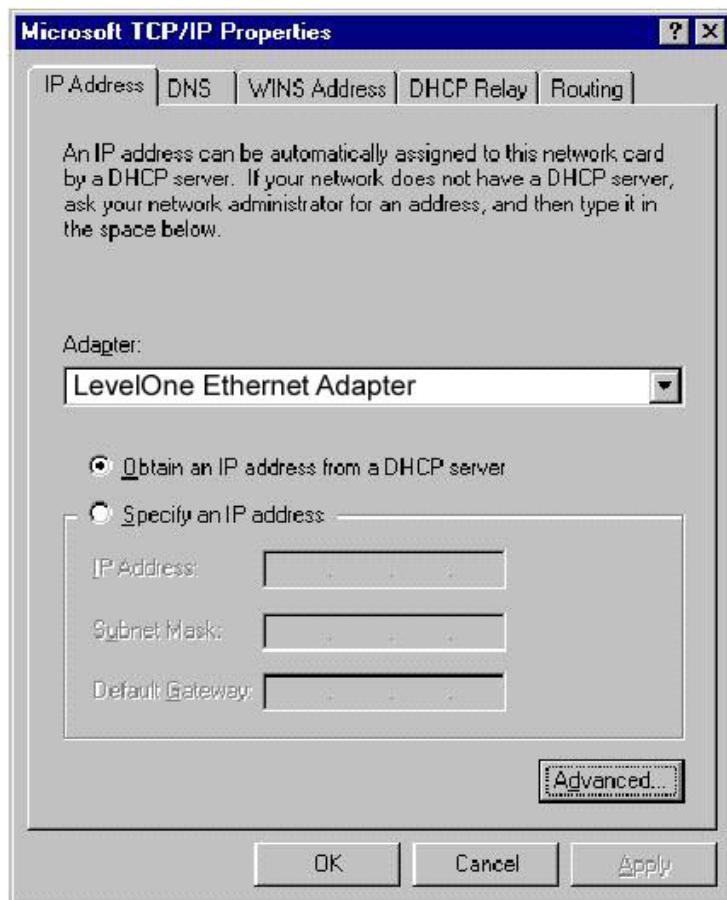
## Checking TCP/IP Settings - Windows NT4.0

1. Select *Control Panel - Network*, and, on the *Protocols* tab, select the TCP/IP protocol, as shown below.



**Figure 14: Windows NT4.0 - TCP/IP**

2. Click the *Properties* button to see a screen like the one below.



**Figure 15: Windows NT4.0 - IP Address**

3. Select the network card for your LAN.
4. Select the appropriate radio button - *Obtain an IP address from a DHCP Server* or *Specify an IP Address*, as explained below.

### Obtain an IP address from a DHCP Server

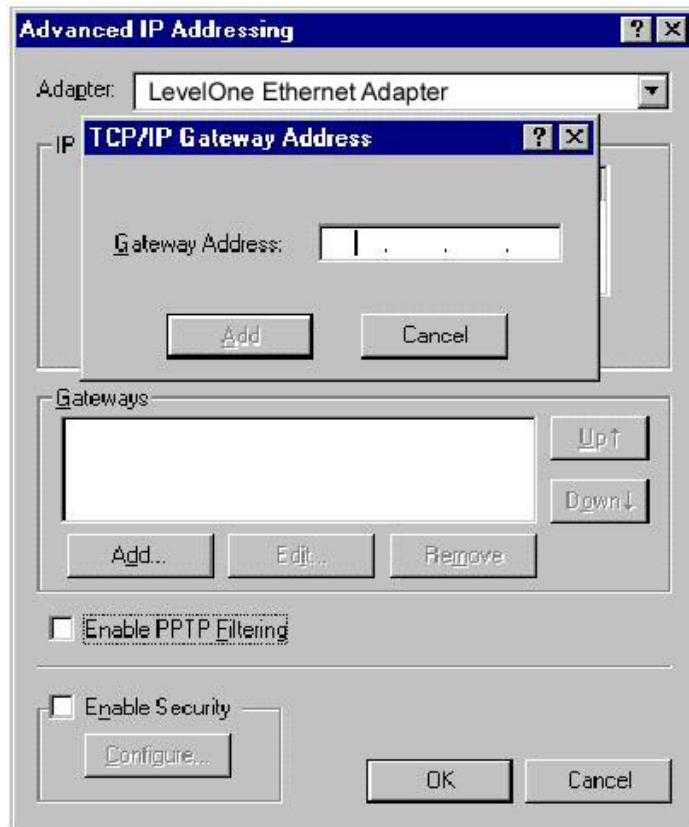
This is the default Windows setting. **Using this is recommended.** By default, the FBR-1416 will act as a DHCP Server.

Restart your PC to ensure it obtains an IP Address from the FBR-1416.

### Specify an IP Address

If your PC is already configured, check with your network administrator before making the following changes.

1. The *Default Gateway* must be set to the IP address of the FBR-1416. To set this:
  - Click the *Advanced* button on the screen above.
  - On the following screen, click the *Add* button in the *Gateways* panel, and enter the FBR-1416's IP address, as shown in Figure 16 below.
  - If necessary, use the *Up* button to make the FBR-1416 the first entry in the *Gateways* list.



**Figure 16 - Windows NT4.0 - Add Gateway**

2. The DNS should be set to the address provided by your ISP, as follows:
  - Click the DNS tab.
  - On the DNS screen, shown below, click the *Add* button (under *DNS Service Search Order*), and enter the DNS provided by your ISP.

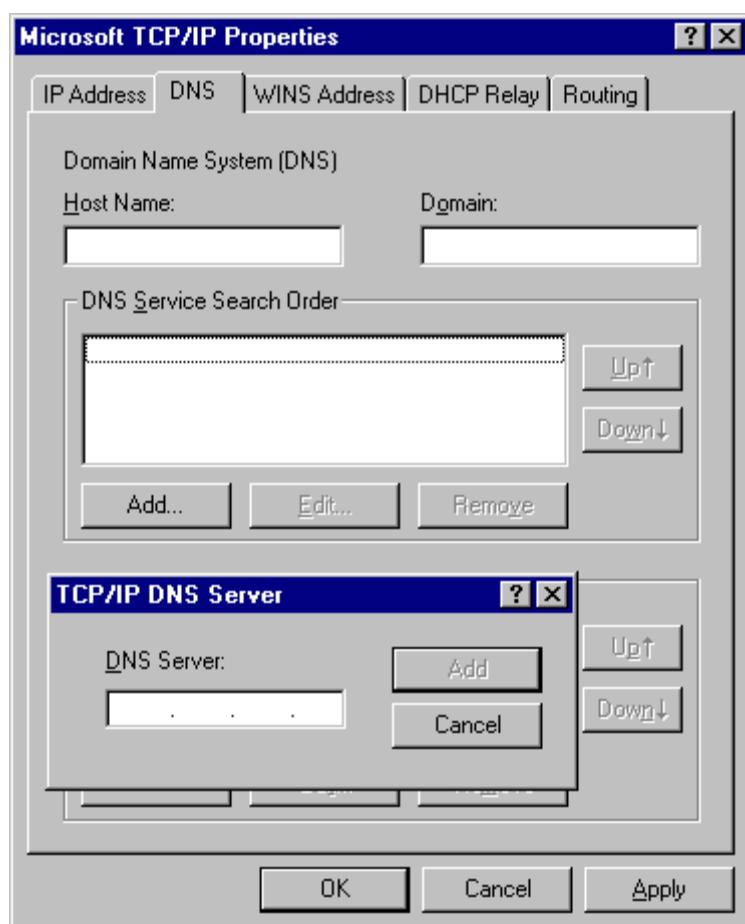
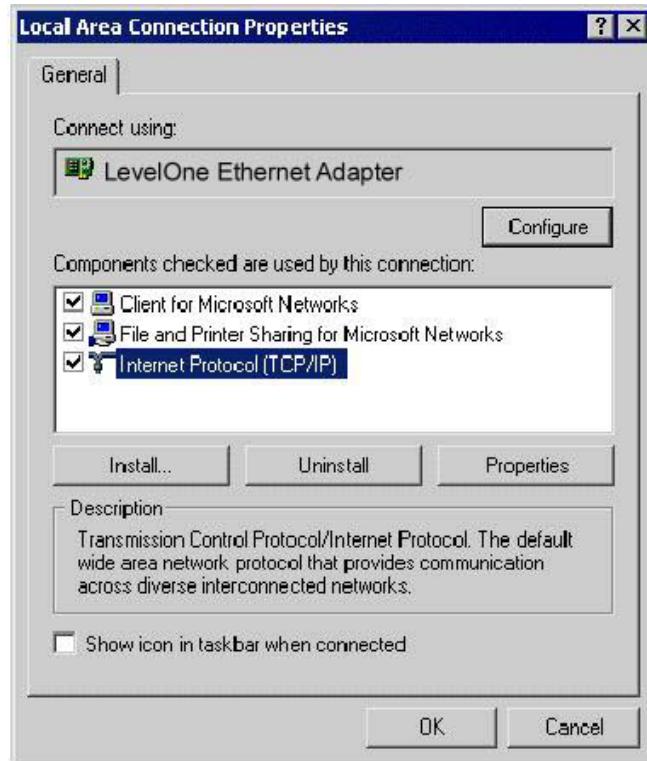


Figure 17: Windows NT4.0 - DNS

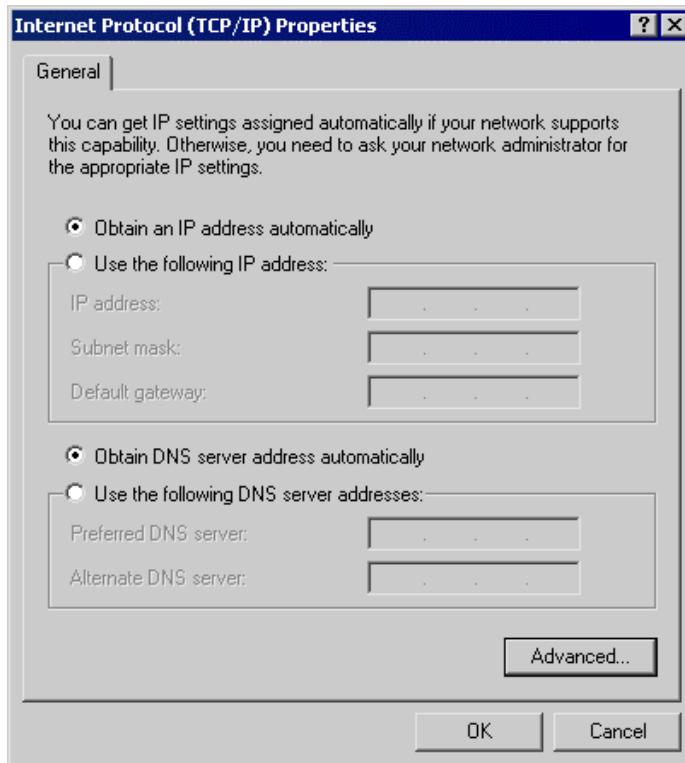
## Checking TCP/IP Settings - Windows 2000:

1. Select *Control Panel - Network and Dial-up Connection*.
2. Right - click the *Local Area Connection* icon and select *Properties*. You should see a screen like the following:



**Figure 18: Network Configuration (Win 2000)**

3. Select the *TCP/IP* protocol for your network card.
4. Click on the *Properties* button. You should then see a screen like the following.



**Figure 19: TCP/IP Properties (Win 2000)**

5. Ensure your TCP/IP settings are correct, as described below.

## Using DHCP

To use DHCP, select the radio button *Obtain an IP Address automatically*. This is the default Windows setting. **Using this is recommended.** By default, the FBR-1416 will act as a DHCP Server.

Restart your PC to ensure it obtains an IP Address from the FBR-1416.

## Using a fixed IP Address ("Use the following IP Address")

If your PC is already configured, check with your network administrator before making the following changes.

- Enter the FBR-1416's IP address in the *Default gateway* field and click *OK*. (Your LAN administrator can advise you of the IP Address they assigned to the FBR-1416.)
- If the *DNS Server* fields are empty, select *Use the following DNS server addresses*, and enter the DNS address or addresses provided by your ISP, then click *OK*.

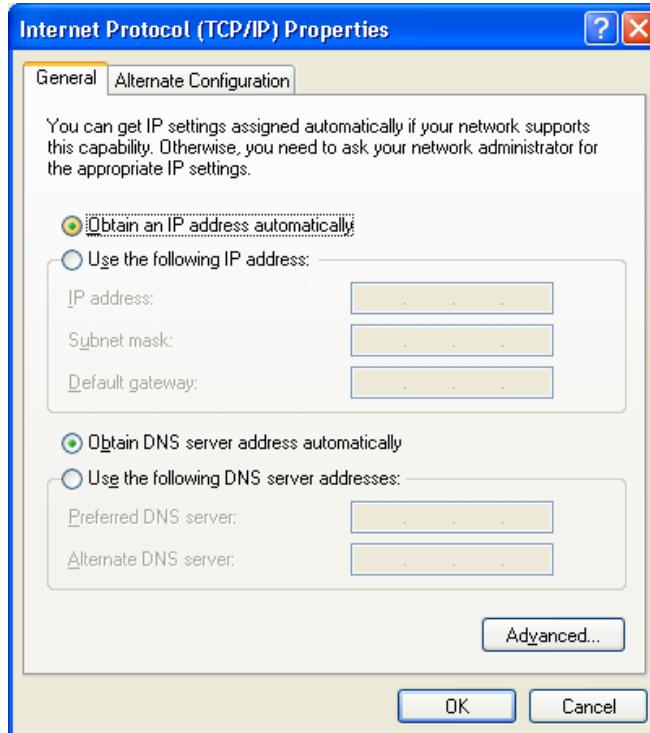
## Checking TCP/IP Settings - Windows XP

1. Select *Control Panel - Network Connection*.
2. Right click the *Local Area Connection* and choose *Properties*. You should see a screen like the following:



**Figure 20: Network Configuration (Windows XP)**

3. Select the *TCP/IP* protocol for your network card.
4. Click on the *Properties* button. You should then see a screen like the following.



**Figure 21: TCP/IP Properties (Windows XP)**

5. Ensure your TCP/IP settings are correct.

## Using DHCP

To use DHCP, select the radio button *Obtain an IP Address automatically*. This is the default Windows setting. **Using this is recommended.** By default, the FBR-1416 will act as a DHCP Server.

Restart your PC to ensure it obtains an IP Address from the FBR-1416.

## Using a fixed IP Address ("Use the following IP Address")

If your PC is already configured, check with your network administrator before making the following changes.

- In the *Default gateway* field, enter the FBR-1416's IP address and click *OK*. Your LAN administrator can advise you of the IP Address they assigned to the FBR-1416.
- If the *DNS Server* fields are empty, select *Use the following DNS server addresses*, and enter the DNS address or addresses provided by your ISP, then click *OK*.

## Internet Access

To configure your PCs to use the FBR-1416 for Internet access:

- Ensure that the DSL modem, Cable modem, or other permanent connection is functional.
- Use the following procedure to configure your Browser to access the Internet via the LAN, rather than by a Dial-up connection.

### For Windows 9x/ME/2000

1. Select *Start Menu - Settings - Control Panel - Internet Options*.
2. Select the Connection tab, and click the *Setup* button.
3. Select "I want to set up my Internet connection manually, or I want to connect through a local area network (LAN)" and click *Next*.
4. Select "I connect through a local area network (LAN)" and click *Next*.
5. Ensure all of the boxes on the following Local area network Internet Configuration screen are **unchecked**.
6. Check the "No" option when prompted "Do you want to set up an Internet mail account now?".
7. Click *Finish* to close the Internet Connection Wizard.  
Setup is now completed.

### For Windows XP

1. Select *Start Menu - Control Panel - Network and Internet Connections*.
2. Select *Set up or change your Internet Connection*.
3. Select the *Connection* tab, and click the *Setup* button.
4. Cancel the pop-up "Location Information" screen.
5. Click *Next* on the "New Connection Wizard" screen.
6. Select "Connect to the Internet" and click *Next*.
7. Select "Set up my connection manually" and click *Next*.
8. Check "Connect using a broadband connection that is always on" and click *Next*.
9. Click *Finish* to close the New Connection Wizard.  
Setup is now completed.

### Accessing AOL

To access AOL (America On Line) through the FBR-1416, the *AOL for Windows* software must be configured to use TCP/IP network access, rather than a dial-up connection. The configuration process is as follows:

- Start the *AOL for Windows* communication software. Ensure that it is Version 2.5, 3.0 or later. This procedure will not work with earlier versions.
- Click the *Setup* button.
- Select *Create Location*, and change the location name from "New Locality" to "FBR-1416".
- Click *Edit Location*. Select *TCP/IP* for the *Network* field. (Leave the *Phone Number* blank.)
- Click *Save*, then *OK*.  
Configuration is now complete.
- Before clicking "Sign On", always ensure that you are using the "FBR-1416" location.

## Macintosh Clients

From your Macintosh, you can access the Internet via the FBR-1416. The procedure is as follows.

1. Open the TCP/IP Control Panel.
2. Select *Ethernet* from the *Connect via* pop-up menu.
3. Select *Using DHCP Server* from the *Configure* pop-up menu. The DHCP Client ID field can be left blank.
4. Close the TCP/IP panel, saving your settings.

**Note:**

If using manually assigned IP addresses instead of DHCP, the required changes are:

- Set the *Router Address* field to the FBR-1416's IP Address.
- Ensure your DNS settings are correct.

## Linux Clients

To access the Internet via the FBR-1416, it is only necessary to set the FBR-1416 as the "Gateway".

**Ensure you are logged in as "root" before attempting any changes.**

### Fixed IP Address

By default, most Unix installations use a fixed IP Address. If you wish to continue using a fixed IP Address, make the following changes to your configuration.

- Set your "Default Gateway" to the IP Address of the FBR-1416.
- Ensure your DNS (Name server) settings are correct.

### To act as a DHCP Client (recommended)

The procedure below may vary according to your version of Linux and X -windows shell.

1. Start your X Windows client.
2. Select *Control Panel - Network*
3. Select the "Interface" entry for your Network card. Normally, this will be called "eth0".
4. Click the *Edit* button, set the "protocol" to "DHCP", and save this data.
5. To apply your changes
  - Use the "Deactivate" and "Activate" buttons, if available.
  - OR, restart your system.

## Other Unix Systems

To access the Internet via the FBR-1416:

- Ensure the "Gateway" field for your network card is set to the IP Address of the FBR-1416.
- Ensure your DNS (Name Server) settings are correct.

# Chapter 5

# Operation and Status

5

*This Chapter details the operation of the FBR-1416 and the status screens.*

## Operation

Once both the FBR-1416 and the PCs are configured, operation is automatic.

However, there are some situations where additional Internet configuration may be required. Refer to *Chapter 6 - Advanced Features* for further details.

## Status Screen

Use the **Status** link on the main menu to view this screen.

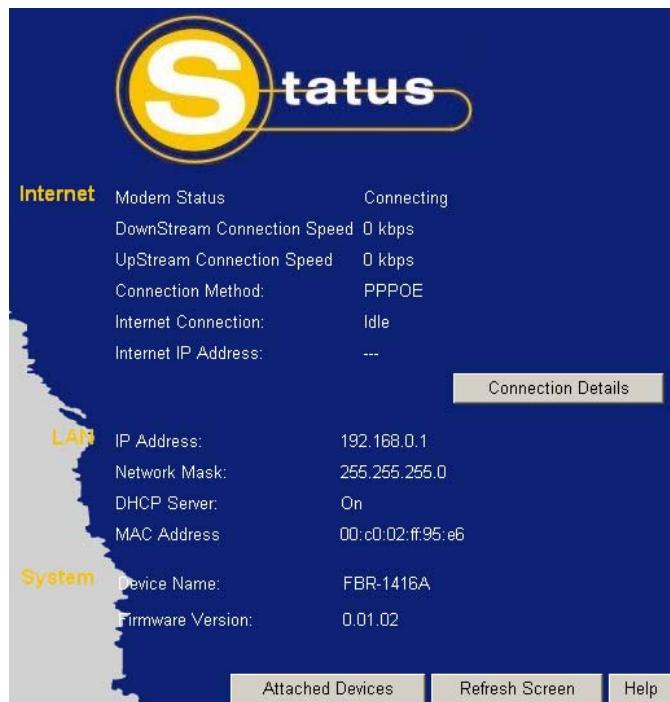


Figure 22: Status Screen

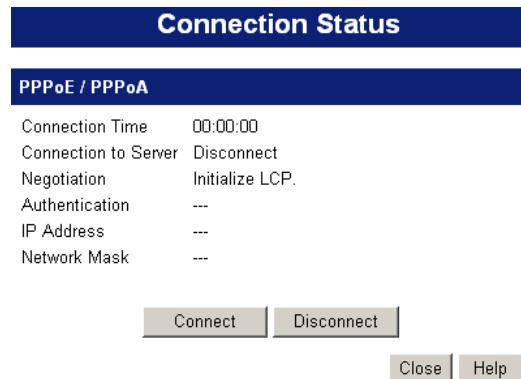
### Data - Status Screen

Internet	
Modem Status	This indicates the status of the ADSL modem component.
DownStream Connection Speed	If connected, displays the speed for the DownStream (download) ADSL Connection.
UpStream Connection Speed	If connected, displays the speed for the UpStream (upload) ADSL Connection.

<b>Connection Method</b>	This indicates the current connection method, as set in the <i>Setup Wizard</i> .
<b>Internet Connection</b>	<p>This indicates the current status of the Internet Connection</p> <ul style="list-style-type: none"> <li>• <b>Connected</b> - Connection exists</li> <li>• <b>Not connected</b> - No current connection established.</li> <li>• <b>Negotiation</b> - The connection is being established.</li> </ul> <p>You can click the "Connection Details" button to find out more information.</p>
<b>Internet IP Address</b>	This IP Address is allocated by the ISP (Internet Service Provider). If using a dynamic IP address, and no connection currently exists, this information is unavailable.
<b>LAN</b>	
<b>IP Address</b>	The IP Address of the FBR-1416.
<b>Network Mask</b>	The Network Mask (Subnet Mask) for the IP Address above.
<b>DHCP Server</b>	This shows the status of the DHCP Server function. The value will be "Enabled" or "Disabled".
<b>MAC Address</b>	This shows the MAC Address for the FBR-1416, as seen on the LAN interface.
<b>System</b>	
<b>Device Name</b>	The current name of the FBR-1416. This is also the "hostname" provided to ISPs who request this information.
<b>Firmware Version</b>	The version of the current firmware installed.
<b>Buttons</b>	
<b>Connection Details</b>	Click this button to open a sub-window and view a detailed description of the current connection. Depending on the type of connection, a "log" may also be available.
<b>Attached Devices</b>	This will open a sub-window, showing all LAN devices currently on the network.
<b>Refresh Screen</b>	Update the data displayed on screen.

## Connection Status - PPPoE & PPPoA

If using PPPoE (PPP over Ethernet) or PPPoA (PPP over ATM), a screen like the following example will be displayed when the "Connection Details" button is clicked.



**Figure 23: PPPoE/PPPoA Status Screen**

### Data – PPPoE/PPPoA Screen

<b>Connection Time</b>	This indicates how long the current connection has been established.
<b>PPPoE Link Status</b>	This indicates whether or not the connection is currently established. <ul style="list-style-type: none"> <li>• If the connection does not exist, the "Connect" button can be used to establish a connection.</li> <li>• If the connection currently exists, the "Disconnect" button can be used to break the connection.</li> </ul>
<b>Negotiation</b>	This indicates the status of the PPPoE Server login.
<b>IP Address</b>	The IP Address of this device, as seen by Internet users. This address is allocated by your ISP (Internet Service Provider).
<b>Network Mask</b>	The Network Mask associated with the IP Address above.
<b>Buttons</b>	
<b>Connect</b>	If not connected, establish a connection to your ISP.
<b>Disconnect</b>	If connected to your ISP, hang up the connection.
<b>Close</b>	Close this window.

## Connection Details - Dynamic IP Address

If your access method is "Direct" (no login), with a Dynamic IP address, a screen like the following example will be displayed when the "Connection Details" button is clicked.

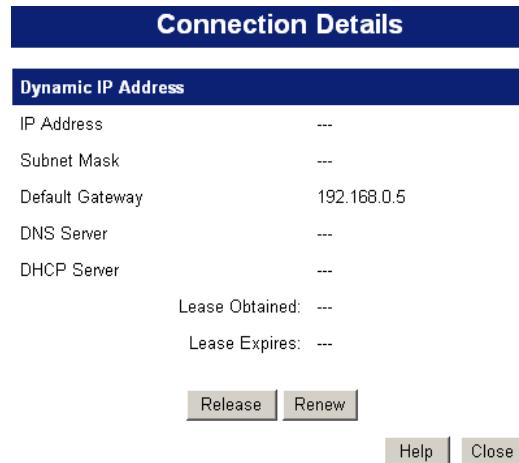


Figure 24: Connection Details - Dynamic IP Address

### Data - Dynamic IP address

<b>Internet</b>	
<b>IP Address</b>	The current IP Address of this device, as seen by Internet users. This address is allocated by your ISP (Internet Service Provider).
<b>Network Mask</b>	The Network Mask associated with the IP Address above.
<b>Default Gateway</b>	The IP address of the remote Gateway or Router associated with the IP Address above.
<b>DHCP Server</b>	The IP address of your ISP's DHCP Server.
<b>DNS Server</b>	The IP address of the Domain Name Server which is currently used.
<b>Lease Obtained</b> <b>Lease Expires</b>	This indicates when the current IP address was obtained, and how long before this IP address allocation (the DHCP lease) expires.
<b>Buttons</b>	
<b>Release</b>	If an IP Address has been allocated to the FBR-1416 (by the ISP's DHCP Server, clicking the "Release" button will break the connection and release the IP Address.
<b>Renew</b>	If the ISP's DHCP Server has NOT allocated an IP Address for the FBR-1416, clicking the "Renew" button will attempt to re-establish the connection and obtain an IP Address from the ISP's DHCP Server.
<b>Close</b>	Close this window.

## Connection Details - Fixed IP Address

If your access method is "Direct" (no login), with a fixed IP address, a screen like the following example will be displayed when the "Connection Details" button is clicked.



Figure 25: Connection Details - Fixed/Dynamic IP Address

### Data - Fixed IP address Screen

<b>Internet</b>	
<b>IP Address</b>	The IP Address of this device, as seen by Internet users. This address is allocated by your ISP (Internet Service Provider).
<b>Network Mask</b>	The Network Mask associated with the IP Address above.
<b>Default Gateway</b>	The IP Address of the remote Gateway or Router associated with the IP Address above.
<b>DNS Server</b>	The IP Address of the Domain Name Server which is currently used.